

Defence.

Ref: A02659

PRIME MINISTERNuclear Advisory Panel DinnerOrigin of Panel

1. The Nuclear Advisory Panel was appointed by your predecessor early in 1979, to provide independent advice in the nuclear weapons field, and to report to him as occasion arose, (eg in connection with the Comprehensive Test Ban negotiations). It was not to have a roving commission but would have specific matters referred to it at the request of Ministers. Its advice was to be confidential to Ministers; there was no announcement of its appointment. Its membership (Annex A) was to be small in number, and comprised of eminent outside scientists who could be cleared to have access to Top Secret Atomic information.
2. A list of Questions subsequently referred by Ministers for the Panel's advice is at Annex B.

Panel's Responses

3. The Panel first met on 10 May 1979, and its first submission was under cover of (then) Sir John Hunt's minute A/09972, to you, dated 13 July 1979. As you will recall, this covered key questions ((i) and (iv) Annex B) concerning the maintenance of nuclear weapons stockpile reliability, and the possibility of failure in verifying compliance with a Comprehensive Test Ban Treaty (CTBT). These were at the time, and as you know remain, very relevant to CTB issues.
4. The essence of the Panel's response to question (i) was that the Atomic Weapons Research Establishment (AWRE) could not in all circumstances have their present degree of confidence in their ability to reproduce exactly the original design specifications without recourse to nuclear weapon testing but, in some particular circumstances, would be obliged to advise HM Government that a nuclear test was desirable.



5. On question (iv), the Panel concluded that successful clandestine testing at yields of three to five kilotons could give the weapon design authorities, of a potential violator, greater confidence in their ability to design kiloton weapons and greater flexibility in the design of high yield weapons. Furthermore, given the information available about salt domes, the Panel feel that, even with currently proposed enhanced seismic systems, the possibility of carrying out an undetected nuclear explosion with yield up to 5 kilotons in an underground cavity has to be recognised.

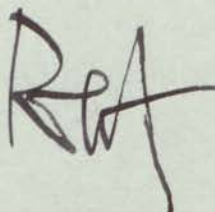
6. The Panel's second response, which I submitted to you under cover of my minute A/01433 dated 15 February 1980, dealt with the implications of Inertial Confinement Fusion (ICF) research for the proliferation of nuclear weapon technology (question (iii) Annex B). This was the issue being discussed by the Panel when you went to one of their meetings last autumn. As you know, it is a question which poses a major difficulty through the overlap of "closed" and "open" science that arises. On this question, the Panel concluded that while ICF research is neither necessary nor sufficient for the development of nuclear weapon technology, it is likely to enable scientists engaged in it to understand the principles of making and assembling thermonuclear weapons. They believed any attempt to control ICF research or publications in civil (or "open") laboratories is likely to be ineffective and, as a result of disclosures which have already taken place (mainly in USA) they recommended a review of current national policies in this respect. They also recommended prior discussions with the United States and on this you agreed. A round of such discussions has just taken place, at official level. At a later stage I shall be submitting on the outcome of these discussions.

7. Finally, with my minute A/02210 dated 20 May 1980, I submitted the Panel's response to the question dealing with the level of nuclear weapons expertise to be maintained so long as we have a nuclear weapon stockpile (question (ii) Annex B). This, like the Panel's first response,

bears closely on the main considerations underlying current negotiations for a possible Comprehensive Test Ban Treaty. On question (ii), the Panel took the view that, in the absence of a CTBT, AWRE's nuclear weapon expertise should not be eroded by lack of experimental testing. They accepted that, in the event of a CTBT being negotiated, a programme involving significant investment in new capital facilities could be designed to help AWRE to maintain a measure of scientific competence in verifying the nuclear performance of warheads in the stockpile, prior to a CTBT becoming effective, but they firmly concluded that nuclear testing would be necessary to justify the introduction of a new warhead design into our stockpile.

8. Lord Penney has pointed out that the Panel has now responded to four of the five questions referred by Ministers and that the fifth is a much more general and longer term question which the Panel need not attempt to answer in the near future. He therefore sees the Panel's task as now substantially completed but he has expressed readiness to respond to any further requests for independent advice on similar nuclear matters if Ministers so wish. You have agreed that the Panel's task is now substantially completed but have welcomed Lord Penney's offer.

9. The guest list attending the Dinner for the Panel, in Admiralty House on 21 July, is at Annex C.



ROBERT ARMSTRONG

18 July 1980

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ANNEX A

NUCLEAR ADVISORY PANEL

MEMBERS:

Lord Penney (Chairman)	Former Rector of Imperial College
Sir Samuel Curran	Vice-Chancellor of Strathclyde University
Lord Zuckerman	Former Chief Scientific Adviser to Government
Professor Sir Samuel Edwards	Professor of Physics, Cambridge University
Professor Sir Hans Kornberg	Professor of Biochemistry, Cambridge University, and Chairman of the Royal Commission on Environmental Pollution

ASSESSOR:

Professor Sir Ronald Mason	Chief Scientific Adviser, Ministry of Defence
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SECRETARY

Dr. R. Press	Cabinet Office (formerly Deputy Secretary for Nuclear Affairs, Science and Technology in Cabinet Office)
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NUCLEAR ADVISORY PANEL

QUESTIONS REFERRED BY MINISTERS FOR THE PANEL'S ADVICE

QUESTION (i)

- (a) Against the background of present Western (not only British) warhead technology, what ageing faults are likely to arise in a stockpile of nuclear weapons over successive 3 year periods?
- (b) Which of these would be expected to be amenable to rectification without subsequent nuclear testing of whole weapon operation?
- (c) Which might require subsequent nuclear testing to re-establish confidence in reliability of whole weapon operation?

QUESTION (ii)

- (a) What are the Panel's views on the level of nuclear weapon expertise to be maintained, so long as a nuclear weapon stockpile is retained?
- (b) What scope of experimental nuclear warhead related work would the Panel consider necessary to maintain this level - bearing in mind that a Comprehensive Test Ban Treaty (CTBT) could prohibit all nuclear weapon tests, but clearly could not ban all nuclear reactions?

QUESTION (iii)

- (a) What implications does Inertial Confinement Fusion (ICF) research have for the proliferation of nuclear weapon technology?
- (b) What steps does the Panel consider should be taken to minimise possible dangers?

QUESTION (iv)

- (a) What scope does the Panel see for possible evasion of compliance with a CTBT under the current limits of detection and verification?
- (b) What minimum threshold level of verification does the Panel consider would ensure that any Party testing below that level would not acquire a unilateral advantage of military significance?

QUESTION (v)

What implications does the Panel see for the UK if there were to be 'cut-off' in the production of fissile material for weapon purposes?

NUCLEAR ADVISORY PANEL DINNER
at ADMIRALTY HOUSE on
MONDAY, 31 JULY 1980
(7.15 for 7.45 p.m.)

GUEST LIST

HOSTS:

Sir Robert Armstrong
Sir Frank Cooper

PANEL MEMBERS

Lord Penney (Chairman)
Lord Zuckerman
Sir Samuel Edwards
Sir Hans Kornberg

(Regretably Sir Samuel Curran was unable to accept
due to commitment overseas)

PANEL ASSESSOR

Sir Ronald Mason

PANEL SECRETARY

Dr. R. Press

Also Mr. D. C. Fakley (Assistant to Sir Ronald Mason)